# GANPAT UNIVERSITY
## B. Tech. Semester: VIII (CIVIL)
### CBCS Regular Examination – April-June-2017
### 2 CI 809 WATER RESOURCES ENGINEERING–II

**Time: 3 Hours**                                               **Total Marks: 70**

1. Instruction:
   1. Answer to the two sections must be written in separate answer books.
   2. Assume suitable data if required.
   3. Figures to the right indicate full marks
   4. Draw schematic diagrams/figures wherever necessary

## SECTION-I

| | | |
|---|---|---|
| **Q-1(a)** | What we mean by 'Economic Analysis'? State the economic objective function for comparing the alternative plans. | 6 |
| **Q-1(b)** | State the different kinds feasibilities applied to water resource project. Narrate in detail the 'Environmental Feasibility'. | 6 |

### OR

| | | |
|---|---|---|
| **Q-1(a)** | What is economic life of a project? Explain the term 'Period of Analysis' for economic analysis of alternative plans. | 6 |
| **Q-1(b)** | What is 'System Engineering'? How it is helpful in concluding the optimum solution? | 6 |
| **Q-2(a)** | Explain the term 'Water Rights'? How it is concern with Water Resources Development?. | 6 |
| **Q-2(b)** | How is surface water and ground water interconnected? State the importance of conjunctive use in Water Resources planning. | 5 |

### OR

| | | |
|---|---|---|
| **Q-2(a)** | Explain 'River Basin Management'. Establish that the Water Quality Management is pivotal in a River Basin Management? | 6 |
| **Q-2(b)** | A new building is proposed with two alternatives A and B. Either alternative A or B will provide the required and intended services. As indicated in the table, alternative A costs more to construct but lasts longer. Alternative B has a lower initial investment but higher operation and maintenance cost and a shorter economic life. Determine the economically optimum plan, considering the rate of interest 8% . | 5 |

| Alternative | Initial Investment Rs | Annual O & M In Rs | Life in Years |
|---|---|---|---|
| A | 500000 | 25000 | 50 |
| B | 300000 | 37768 | 25 |

**Q-3** Write a short note on any two of the followings:  12

(1) Water Resources Management-A strategy for survival
(2) Reservoir pools [with sketch]
(3) State agencies dealing with Water resources

## SECTION-II

**Q-4(a)** Define the term 'Sustainability'. Explain the strategies for 'Sustainable Ground Water Resources Development'.  6

**Q-4(b)** What we mean by the term 'Global Warming? Which are the factors primarily responsible for the global warming?  6

**OR**

**Q-4(a)** Narrate the various threats to the fresh water resources. Which one you think is the most disastrous? Why?  6

**Q-4(b)** Define and differentiate the terms 'Contamination' and 'Pollution'.  6

**Q-5(a)** What is sediment yield? Explain Universal soil loss equation and modified universal soil loss equation.  6

**Q-5(b)** Draw Flow chart of Simple watershed models.  5

**OR**

**Q-5(a)** Determine the peak runoff rate for a return period of 20 years to design a erosion control structure in a catchment area of 10 km2 .the maximum depth of rainfall during 20 years return period is as fallows  6

| Rainfall duration (min) | 5 | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|---|
| Rainfall depth(mm) | 20 | 25 | 40 | 70 | 85 | 100 | 115 |

(Assume slope of catchment as 0.5%, average runoff coefficient of catchment is 0.45 and longest length of water course is 100 m)

**Q-5(b)** What is erosion? Explain splash erosion in detail.  5

**Q-6** Write a short note on [Any Three]:  12

(1) Estimation of Storm water discharge
(2) Climate Change
(3) Basin lag
(4) Rain water harvesting

### END OF PAPER